

WHAT IS CLAIMED IS:

1. A ring network comprised of a plurality of transmission apparatuses connected in a ring shape by a transmission line,

5 each of said plurality of transmission apparatuses including a cross-connect function unit and a communication function unit communicating among them over said transmission line using overhead of a transmission frame,

10 at least a transmission apparatus serving as a master among the plurality of transmission apparatuses including a path management database for collecting and storing path setting information of all of said transmission apparatuses, a path decision unit for
15 determining a long path when switching from a UPSR mode to a BLSR mode, and an interchange decision unit for determining interchange of a path on a protection channel to an idle work channel and requesting path interchange.

2. A ring network as set forth in claim 1, wherein
20 said path decision unit has a means for deciding on a long path to be deleted based on path setting information stored in said path management database and sending a request for deletion of path setting information based on the result of the decision
25 and

an interchange decision unit has a means for deciding whether to change a path set on a protection channel to an idle work channel and sending a request for interchange based on path setting information stored in
30 said path management database.

3. A method of path interchange for changing, in a ring network comprised of a plurality of transmission apparatuses connected in the form of a ring by a transmission line, from an operating state of the UPSR
35 mode to an operating state of a BLSR mode comprising:

making one among the plurality of transmission apparatuses a master,

inputting a command for updating from the
UPSR mode to the BLSR mode to the master transmission
apparatus and,

5 in accordance with the command, having the
master transmission apparatus

collect path setting information of other
transmission apparatuses to store it in a path management
database,

10 decide on a long path by referring to the
path management database, delete the path setting
information of the long path, and update the path
management database and

15 decide on a path on a protection channel
referring to said path management database, change the
path to an idle work channel, and update the path
management database.

4. A method of path interchange as set forth in
claim 3, further comprising:

20 a step of having a master transmission
apparatus send a BLSR update request message to other
transmission apparatuses to make each transmission
apparatus shift to a BLSR update request state, send a
BLSR update execution message to make each transmission
apparatus shift to a BLSR update execution state, and
25 send a path information request message;

having each of said other transmission
apparatuses send a path information response message
including path setting information in reply to said path
information request message; and

30 having said master transmission apparatus
store the received path setting information in the path
management database, and

a step of having a master transmission
apparatus decide on a long path by referring to the path
35 management database;

send a path control request message for
deleting the path setting information of the long path;

receive a response message in reply to
said path control request message; and

update said path management database; and

a step of having said master transmission

5 apparatus decides on a path on a protection channel by
referring to this path management database;

send a path control request for
interchanging said path to an idle work channel;

10 receive a response message in reply to
said path control request message to update said path
management database; and

make the BLSR update execution state shift
to an initial state.

15 5. A method of path interchange as set forth in
claim 4, further comprising sending said messages between
said master transmission apparatus and said other
transmission apparatuses using overhead of a transmission
frame transferred over said transmission line.